

REMARKS/ARGUMENTS

Favorable reconsideration of this application is respectfully requested in view of the above amendments and the following remarks.

Claims 52-74 and 77-80 are pending in this application. By this amendment, Claims 77-80 have been added; and Claims 75 and 76 have been canceled. Claims 52-55, 59-71 and 74 stand withdrawn from consideration as directed to one or more non-elected inventions.

Withdrawn Claim 59 depends from independent Claim 56, and withdrawn Claim 74 depends from independent Claim 72. It is respectfully requested that upon allowance of either Claim 56 or Claim 72 that Claim 59 or Claim 74 be rejoined under the procedure of MPEP § 821.04.

In the outstanding Office Action, Claims 56-58 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schell et al. (U.S. 5,952,110, hereinafter “Schell”) in view of Koizumi et al. (EP 1035231 A1, hereinafter “Koizumi”); Claims 72 and 73 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schell in view of Koizumi and further in view of Kamo et al. (U.S. 4,738,227, hereinafter “Kamo”) and Church et al. (U.S. 3,956,531, hereinafter “Church”); Claim 56-58 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 26, 27, 30 and 31 of co-pending Application Serial No. 10/560,360 in view of Schell; and Claims 72 and 73 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 26, 27, 30 and 31 of co-pending application serial number 10/560,360 in view of Schell, Koizumi, Kamo and Church.

The rejections of Claims 56-58, 72 and 73 based on the cited references is respectfully traversed.

The Office Action correctly recognizes that “Schell et al. does not teach depositing this composite layer by an electric spark machine process.”

It is respectfully submitted that based on the evidence provided by the attached Declarations Under 37 C.F.R. § 1.132 of Keisuke Kawachi and Hiroyuki Ochiai that Koizumi neither describes nor renders obvious an electric spark machine as recited in independent Claims 56 and 72.

Declarant Keisuke Kawachi is an expert in welding as shown by his attached curriculum vitae. In his declaration he describes manual metal arc welding and his understanding of the Koizumi disclosure. Mr. Kawachi states:

I have reviewed the publication No. H11-106948 (a JP family application of EP 1035231) to Koizumi et al. The art disclosed therein seems involved in, or is a modified version of, arc welding.

FIG. 2 of Koizumi clearly shows an electrode rod 8 connected to a positive pole of a power supply and a subject body 6 grounded via a negative pole, in which the electrode rod 8 is manually handled by means of a hand-held holder 9. This is a typical construction used in so-called "manual metal arc welding".

It is well-known in this art field that a constant current (or voltage) power supply is used to generate a continuous arc. By way of contrast Koizumi does not expressly describe its detail. A capacity of the power supply in manual metal arc welding is typically several hundreds of amperes. A generated continuous arc is used for substantially fully fusing the tip of the electrode rod and causing the molten metal to adhere to the subject body.

Further, Hiroyuki Ochiai is an expert in electric spark machining as shown by his attached curriculum vitae. He is further one of the inventors of the instant application. He presents evidence contrasting the manual metal arc welding as described in Koizumi with the claimed subject matter. In his declaration he states:

With the help of Mr. Kawachi's comments in his Declaration, I respectfully assert that the electric spark machine as claimed is clearly different from the Koizumi device.

One reason is that an electric spark machine uses intermittent pulse current to generate pulsing electric discharges. By way of contrast, the Koizumi device uses a direct current power supply to supply a continuous direct current to an electrode.

Please see our specification which describes and teaches generation of pulsing electric discharges. In contrast, continuous direct current in general does not cause generation of pulsing electric discharges. Rather it causes a steady discharge. This presents a clear contrast between the claimed electric spark machine and the Koizumi device.

Another reason is that the current flow level in the process of electric spark machining is far lower than that in the Koizumi process. In an electric spark machine, peak current applied to a workpiece is not greater than several tens of amperes and the average current is still smaller than that because current flows only at limited periods of a pulse width of several hundreds of a microsecond. Thus, injected energy is far less than that utilized by Koizumi, thereby reducing thermal damage on the subject body.

An additional reason is that operation of electric spark machining is not manual but should be properly servo-controlled. A servo system is installed in an electric spark machine and is used to keep a properly narrow gap between an electrode and a subject body. The claimed subject matter and the Koizumi device show a distinct contrast between electric spark machining and manual arc welding.

As evidenced by the attached Declarations, Koizumi fails to describe or render obvious a pulse generator which is essential to electric spark machines. Therefore Koizumi does not describe use of an electric spark machine. The descriptions in the references are based on a process different from that of electric spark machining of the present invention as recited in Claims 56 and 72. One skilled in the art could not determine whether the teachings in the Koizumi reference are also applicable to an electric spark machine.

Similar comments apply to the Schell reference.

Further, statements in paragraph 12 in the "Response to Arguments" section of the Office Action do not present a *prima facie* case. Diamond must not melt even at very high temperatures over 1500 degrees C. Even though diamond particles are found in a coating of the Koizumi description, it is not evidence that the ESA taught by Koizumi is similar to electric spark machining of the present invention. What Applicants previously argued in the

response filed June 29, 2010 is that whether metal fully melts or not presents a contrast between the Koizumi reference and electric spark machining as claimed.

Please note that the claims at issue commonly recite use of “an electric spark machine”. Even if one skilled in the art were to combine Koizumi with the other reference(s), he or she would not be taught use of an electric spark machine. Thus, the claims are unobvious over the references. As all the prior art rejections are commonly based on the Koizumi reference, the aforementioned comments are submitted to overcome all the prior art rejections.

The provisional rejections of Claims 56-58, 72 and 73 on the ground of nonstatutory obviousness-type double patenting are respectfully traversed.

Claims 26, 27, 30 and 31 of co-pending Application Serial No. 10/560,360 require carbonization of Si by a chemical reaction with alkane hydrocarbons to form SiC because otherwise Si by itself forms a coating. If the teaching is combined with Schell, one skilled in the art would not predict formation of a coating of NiCr alloys or M-CrAlY alloys from an electrode of the identical material as required in the claims. One skilled in the art would not have a reasonable expectation of success without undue experimentation. Thus the claims of the current application are not obvious over claims 26, 27, 30 and 31 of co-pending Application Serial No. 10/560,360.

It is respectfully submitted that dependent Claims 57-59, 73, 74 and 77-80 are patentable at least for the reasons argued above with regard to Claims 56 and 72 from which they depend.

Accordingly, it is respectfully requested that the rejections of Claims 56-58, 72 and 73 be reconsidered and withdrawn, and that Claims 56-59, 72-74 and 77-80 be passed to allowance.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below-listed telephone number.

Respectfully submitted,

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MAIER & NEUSTADT, L.L.P.

A handwritten signature in black ink, appearing to read "Philippe J.C. Signore", written over a horizontal line.

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